DETAILED ACTION

The Examiner acknowledges the amendment filed December 12, 2011.

Response to Arguments

Applicant's arguments have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 2, 5, 9 – 13, 15, 16, 19 – 22, 24 – 27, 29 – 31, 33, 35, 37 – 40, 42, and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kong et al. U.S. PGPub No. 2004/0117212 A1 ("Kong") in view of Engstrom U.S. Patent No. 6,549,756, previously cited, further in view of Song et al. U.S. PGPub No. 2004/0167420 A1 ("Song").

Regarding claim 1, Kong discloses an input device, comprising:

a body having an interior portion containing electronics that are configured to perform a wireless communication including at least one of a mobile telephone communication and

television remote controller communication (*Kong paragraphs 0071, 0072 mobile device 400 comprises a PDA, handheld PC, or cellular phone*);

a plurality of bioindex detecting means, each for detecting at least one bioindex of a sweating, a Galvanic Skin Reflex, a Galvanic Skin Response, and a body temperature to product an output value, a first one of the plurality of bioindex detecting means located at a front face of a casing of the body, the front face including a display screen, a second one of the plurality of bioindex detecting means located at a side face of the casing of the body (*Kong paragraphs 0074, 0076, 0085, 0105, 0106, figures 7 and 8 sensors are placed on the sides and front of the mobile device, and include at least skin conductance, GSR, and temperature sensors, further where the mobile device has a display on the front next to physiological sensors*); and

Kong discloses a cellphone or PDA having sensors disposed on both sides of the device which output measurement values, where the sensors are to be used while the user is holding the device. Kong fails to disclose selecting output values based on comparisons of the measurement values. However, Engstrom a reference in an analogous art of mobile devices having embedded sensors, discloses a cellphone or PDA having sensors disposed along the sides, where the device determines which sensors to use based on recognizing the user's holding pattern by comparing signal strengths (*Engstrom column 2 lines 51 – 67, column 3 lines 1 – 55*). It would have been obvious to one of ordinary skill in the art at the time of invention to modify the cellphone/PDA having built in sensors of Kong with the sensor value selection based on signal strength of Engstrom, since Engstrom teaches selecting sensor values based on measurement signal strength provides hand-holding pattern recognition, which is useful for yielding more reliable readings in handheld sensor devices (*Engstrom column 3 lines 17 – 39*).

Furthermore, Kong and Engstrom disclose selecting sensor output values by signal strength, but fail to disclose selecting outputs using signal-to-noise ratio comparisons. However, Song a reference in an analogous art of physiological data monitoring discloses selecting electrode combinations using evaluations of signal-to-noise ratios of electrode outputs (*Song paragraphs 0083 – 0085*). It would have been obvious to one of ordinary skill in the art at the time of invention to try to substitute the signal strength comparison of Engstrom with the known method of signal-to-noise ratio comparison of Song, since Song teaches using this method for determining the electrodes with minimized interference and optimized voltage, similar to the highest strength selection of Engstrom.

2. The input device according to claim 1, wherein one of the plurality of bioindex detecting means detects at least one of a heartbeat, a pulse wave, a Galvanic Skin Reflex, a Galvanic Skin Response, a MV (Micro Vibration), a myoelectric potential, and a SPO2 (blood oxygen saturation level) (*Kong paragraphs 0022, 0033, 0034, 0038, 0085 sensors include at least GSR and PPG (pulse wave)*).

5. The input device according to claim 1, wherein one of the plurality of bioindex detecting means detects the body temperature (*Kong paragraphs 0022, 0034, 0038 skin temperature sensor*).

Regarding claims 9 – 13, 15, 16, 19, and 42, the Examiner cites Engstrom column 2 lines 51 – 67, column 3 lines 1 – 39, Song paragraphs 0047, 0069, 0083 – 0085, and Kong paragraphs

0118 – 0120, 0135, 0136, figures 7 and 8. The references teach measuring multiple physiological parameters on a handheld device, where the sensor outputs are evaluated for signal strength and signal-to-noise ratios for selection of sensors to be used for analysis, further where the selected sensor measurements are analyzed to detect states and conditions of the user. Analysis includes averaging collected data from multiple sensors, correlating collected sensor data, and classifying user conditions based on the data. Finally, the references also teach that different types of sensors may be used to collect similar data, such as an EDA or GSR sensor used to detect skin conductivity activity.

Claims 20 – 22, 24, and 25 are rejected on substantially the same basis as claims 1, 2, 5, 9 – 13, 15, 16, 19, and 42 above, by the ordinary usage of the apparatus of Kong in view of Engstrom, further in view of Song.

Claims 26, 27, 35, and 37 are rejected on substantially the same basis as claims 1, 2, 5, 9 – 13, 15, 16, 19, and 42 above, by the apparatus of Kong in view of Engstrom, further in view of Song.

Regarding claims 29 – 31 and 38 – 40, Kong discloses in at least paragraphs 0029, 0105, 0106, 0147, 0149, 0169, 0175, figures 7 and 8 a device having sensors disposed along the front, sides (where Engstrom also shows sensors disposed in the corners of the device), and rear of the housing, where the front face comprises operational buttons and a display which provides for control operation and provides guidance for taking measurements.

Regarding claim 33, Kong, Engstrom, and Song disclose a mobile device having sensors disposed on the rear face of the device for measuring data while the user holds the device and in response to guidance from the device display, further where Engstrom teaches the use of pulse wave sensors on the mobile device.

43. The input device according to claim l, wherein the input device inputs instructions to any one of a personal computer, a television image receiver, a video and/or audio signal recording and/or reproducing device, and an air conditioner (*Kong paragraphs 0071, 0072 mobile device 400 comprises a PDA, handheld PC, or cellular phone, which themselves are computers to which instructions can be input. Furthermore, PDAs and handheld PCs communicate with other computers*).

Claims 34 and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kong et al. U.S. PGPub No. 2004/0117212 A1 ("Kong") in view of Engstrom U.S. Patent No. 6,549,756, previously cited, further in view of Song et al. U.S. PGPub No. 2004/0167420 A1 ("Song") as applied to claims 1, 26, and 33 above, further in view of Arai et al. U.S. Patent No. 4,332,258 ("Arai"), previously cited..

Regarding claims 34 and 44, Kong, Engstrom, and Song disclose a mobile device having blood flow rate sensors which are configurable on the rear of the device, yet fail to explicitly disclose blood flow sensors having light emitting and receiving means, and further fail to

disclose having a finger holding cover shaped to take the same shape as a finger tip. However Arai a reference in an analogous art of handheld pulse rate monitoring devices discloses a handheld device which uses light emitting and receiving means to measure blood flow, and discloses a curved finger cover over a pulse meter (*Arai figure 1 column 2 lines 51 – 55*). It would have been obvious to one of ordinary skill in the art at the time of invention to modify the rear – face blood flow sensor of Kong, Engstrom, and Song with the curved finger cover of Arai, since Arai states the finger cover blocks external light from interfering with blood flow sensors (*Arai column 2 lines 51 – 55*), thus improving measurement accuracy. Furthermore, it would be obvious to implement the light emitting and receiving means in the blood flow rate sensors of Kong, Engstrom, and Song, since reflected light detection is a known method of monitoring blood flow / pulse rate.

Claim 45 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kong et al. U.S. PGPub No. 2004/0117212 A1 ("Kong") in view of Engstrom U.S. Patent No. 6,549,756, previously cited, further in view of Song et al. U.S. PGPub No. 2004/0167420 A1 ("Song") as applied to claims 1 above, further in view of Kohinata et al U.S. PGPub No. 2003/0129964 A1 ("Kohinata").

Regarding claim 45, Kong, Engstrom, and Song disclose a mobile device having multiple sensors of each parameter type, including temperature sensors. Kong, Engstrom, and Song fail to disclose calculating the difference between two temperature sensors on the device. However Kohinata a reference in an analogous art of temperature monitoring discloses multiple

temperature sensors in contact with a user and ambient air, where a processor calculates differences between the sensor values to determine whether the phone is being held (*Kohinata paragraphs0035, 0036, 0052, 0074, 0077*). It would have been obvious to one of ordinary skill in the art at the time of invention to modify the temperature data collection and processing of Kong, Engstrom, and Song with the multi-sensor temperature collection and difference calculations of Kohinata, since Kohinata teaches throughout the publication that such temperature data processing is useful for activating measurements in the device and conserving power when the device is not being held.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KAI RAJAN whose telephone number is (571)272-3077. The examiner can normally be reached on Monday - Friday 9:00AM to 4:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sam Yao can be reached on 571-272-1224. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Kai Rajan/
Examiner, Art Unit 3769

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Primary Examiner, Art Unit 3769

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